

In the Claims

Applicants have submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please amend pending claims 1, 14, 15, 53, 55, 56, and 62 as noted below. Please add new claims 77-79 as noted below.

1. (Currently Amended) Apparatus for culturing cells, comprising:

a vessel for holding liquid cell culture media,

a matrix assembly mounted in the vessel for movement in the media, said matrix assembly including a support and at least one rigid ~~a plurality of~~ three-dimensional porous solid matrix member ~~members~~ carried by the support for movement therewith, wherein the porous solid matrix member is a unitary structure, and

a drive member operatively coupled to the support for moving it with the matrix members through the media.

2. (Original) Apparatus as defined in claim 1, wherein the support includes a shaft, an outwardly extending member from and connected to the shaft, and a holder for carrying at least one three-dimensional porous matrix member and mounted on the outwardly extending member.

3. (Original) Apparatus as defined in claim 2, wherein the holder is removably attached to the outwardly extending member.

4. (Original) Apparatus as defined in claim 2, wherein the outwardly extending member carries a plurality of holders.

5. (Original) Apparatus as defined in claim 3, wherein the holder carries a plurality of three-dimensional porous matrix members.

6-13. (Canceled)

14. (Currently Amended) Apparatus for culturing cells, comprising:
a relatively rigid vessel for holding liquid cell culture media having an opening for providing access to its interior and a cover for the opening,
a shaft disposed in the vessel and supported for rotation in the vessel by the cover,
an outwardly extending member attached to the shaft extending outwardly from the axis of rotation of the shaft for rotation therewith,
a plurality of holders attached to the outwardly extending member, and
at least one rigid three-dimensional porous matrix member carried by the holders for rotation with the shaft in the media.

15. (Currently Amended) Apparatus for culturing cells, comprising:
a relatively rigid vessel for holding liquid cell culture media having an opening for providing access to its interior and a cover for the opening,
a shaft supported in the vessel by the cover,
an outwardly extending member attached to the shaft extending outwardly from the axis of rotation of the shaft for rotation therewith,
a plurality of holders attached to the outwardly extending member, and
at least one rigid three-dimensional porous matrix member carried by the holders for rotation with the outwardly extending member in the media.

16-22. (Canceled)

23. (Original) A matrix assembly for culturing cells, comprising:
a generally U-shaped holder having a pair of substantially parallel arms connected together at one end by a base arm and having an open end at the other,
a mounting device joined to the base arm for mounting the holder to a support,
a groove in each of the arms generally facing one another, and
at least one three-dimensional porous matrix member having its periphery removably disposed in the groove of each arm.

24-27. (Canceled)

28. (Original) A matrix assembly, comprising:

a generally U-shaped holder having a pair of spaced apart coplanar arms connected together at one end by a base arm and having an open end at the other,

at least one three-dimensional porous matrix member carried by the arms and detachably connected thereto, said three-dimensional porous matrix member being disposed between and in the plane of the arms,

a mounting device attached to the base arm for mounting the holder to a support, and

a closure-cap detachably mounted to the open end of the arms for preventing the three-dimensional porous matrix member being withdrawn from between the arms, said closure-cap having a handle for stripping the closure-cap from the holder and for carrying the assembly without touching the three-dimensional porous matrix member.

29-37. (Canceled)

38. (Original) A support and matrix assembly for culturing cells, comprising:

a shaft for disposition in vessel containing liquid cell culture media,

a support-wheel mounted on the shaft and having a plurality of arms extending outwardly away from the shaft, each of said arms having at least one station for carrying a matrix assembly,

a plurality of matrix assemblies mounted on each of the stations, each assembly including a U-shaped holder having a pair of generally parallel and spaced apart arms connected together at one end by a base arm and having an open end at the other,

a mounting device attached to the base arm for mounting the holder to the station on the arm of the support-wheel,

a groove on each of the arms of the holder facing one another for supporting three-dimensional porous matrix members between and generally in the plane of the arms, and

a closure-cap for each of the holders for retaining the three-dimensional porous matrix member, between the arms.

39-48. (Canceled)

49. (Original) A matrix cartridge for culturing cells, comprising:
a generally U-shaped holder having a pair of spaced apart coplanar arms connected together at one end by a base arm and having an open end at the other,
at least one three-dimensional porous matrix member carried by the arms and detachably connected thereto, said three-dimensional porous matrix member being disposed between and in the plane of the arms,
a mounting device attached to the base arm for mounting the holder to a support,
a closure-cap detachably mounted to the open end of the arms for preventing the three-dimensional porous matrix member being withdrawn from between the arms, said closure-cap having a handle for stripping the closure-cap from the holder and for carrying the assembly without touching the three-dimensional porous matrix member, and
a container having a well for an assembled holder, closure-cap and three-dimensional porous matrix member, said container having a cover for sealing the well with the holder, closure-cap and three-dimensional porous matrix member.

50-52. (Canceled)

53. (Currently Amended) Apparatus for culturing cells, comprising:
a vessel for holding liquid cell culture media,
a matrix assembly mounted in the vessel for movement in the media, said matrix assembly including a support and at least one rigid three-dimensional porous solid matrix member carried by the support for movement therewith, wherein the porous solid matrix member is a unitary structure, and
drive means operatively coupled to the support for moving it with the matrix members through the media.

54. (Canceled)

55. (Currently Amended) Apparatus for culturing cells, comprising:
a relatively rigid vessel for holding liquid cell culture media having an opening for providing access to its interior and a cover for the opening,
first means disposed in the vessel and supported in the vessel by the cover,
an outwardly extending member attached to the first means and rotatable in the vessel,
a plurality of holders attached to the outwardly extending member, and at least one rigid three-dimensional porous matrix member members carried by the holders, and
means for moving the outwardly extending member with the holders in the media.

56. (Currently Amended) A matrix assembly, comprising:
a holder having means for mounting the holder to a support,
engaging means on the holder for carrying a three-dimensional porous matrix member,
and
at least one rigid three-dimensional porous matrix member attached to the holder by the engaging means.

57-61. (Canceled)

62. (Currently Amended) A method for *in vitro* culture of cells, comprising:
introducing an amount of cells into a rigid three-dimensional porous solid matrix having interconnected pores of a pore size sufficient to permit the cells to grow throughout the matrix, wherein the porous solid matrix is a unitary structure,
culturing the cells under conditions sufficient to allow the cells to adhere to the three-dimensional porous matrix, and
moving the three-dimensional porous matrix in a liquid cell culture medium under conditions sufficient to promote maintenance, expansion, or differentiation of the cells.

63-76. (Canceled)

77. (New) A matrix assembly for culturing cells, comprising:

a support comprising a shaft, and an outwardly extending member extending from and connected to the shaft, and

at least one rigid three-dimensional porous solid matrix member carried by the support for movement therewith, wherein the porous solid matrix member is a unitary structure.

78. (New) A matrix assembly as claimed in claim 77, wherein the support further comprises a holder attached to the outwardly extending member.

79. (New) A matrix assembly as claimed in claim 78, wherein the holder is generally U-shaped, having a pair of substantially parallel arms connected together at one end by a base arm and having an open end at the other.